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- (54) **Title:** MULTILAYER EXTREME ULTRAVIOLET REFLECTOR MATERIALS

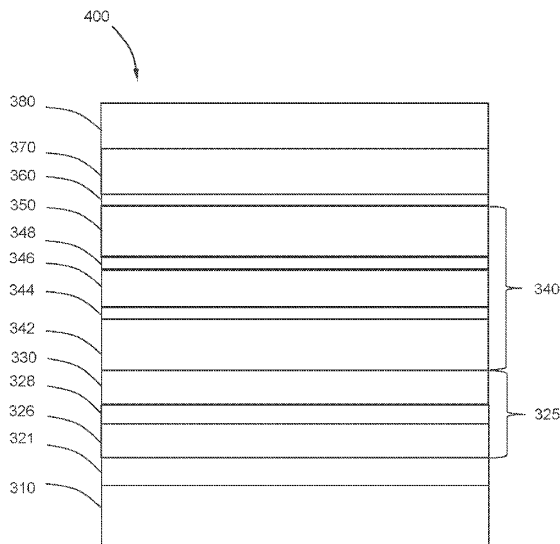


FIG. 5

(57) **Abstract:** Extreme ultraviolet (EUV) mask blanks, produc-
tion systems therefor, and methods of increasing multilayer film
reflectance are disclosed. The EUV mask blanks comprise a bi-
layer film on a substrate. The bilayer film comprises a first film
layer including silicon (Si), and a second film layer compris-
ing an element selected from the group consisting of ruthenium
(Ru), nickel (Ni), cobalt (Co), tungsten (W), iron (Fe), titanium
(Ti) and silicides thereof. Some EUV mask blanks further com-
prise a multilayer reflective stack comprising alternating layers
on the bilayer film and a capping layer on the multilayer refle-
ctive stack. Some EUV mask blanks include a smoothing layer se-
lected from the group consisting of molybdenum silicide (MoSi),
boron carbide (B₄C) and silicon nitride (SiN) on the multilayer
reflective stack, a capping layer on the smoothing layer, and an
absorber layer on the capping layer.

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